

TITLE: Architectures for Sensor Networks for Biological and Chemical Warfare Agent
Detection and Identification

INVENTORS NAME: Aravind Padmanabhan et al.

DOCKET NO.: 256.124US1

1/16

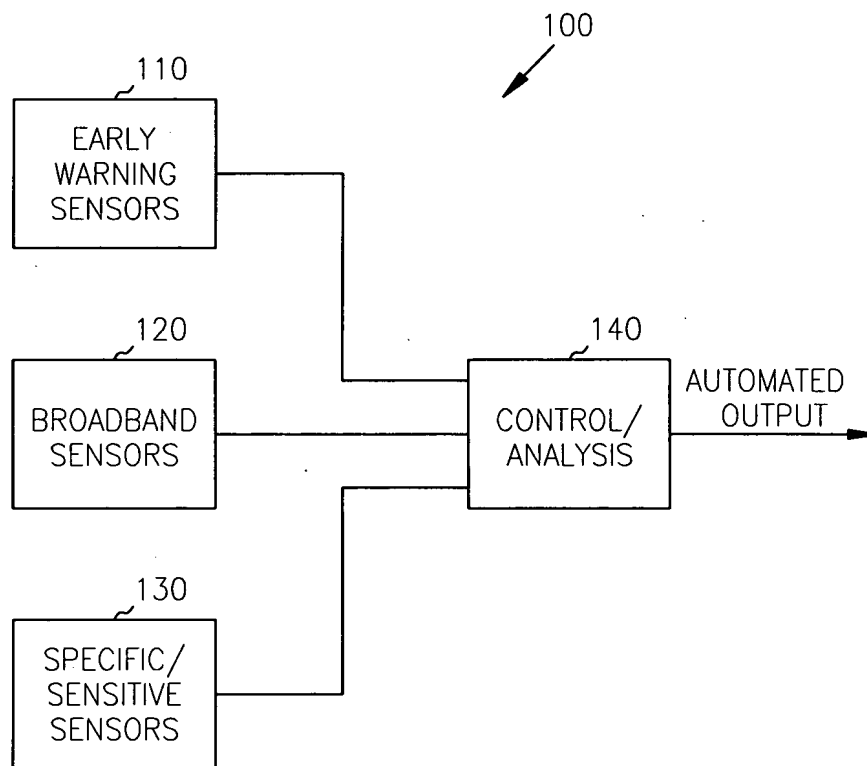


FIG. 1

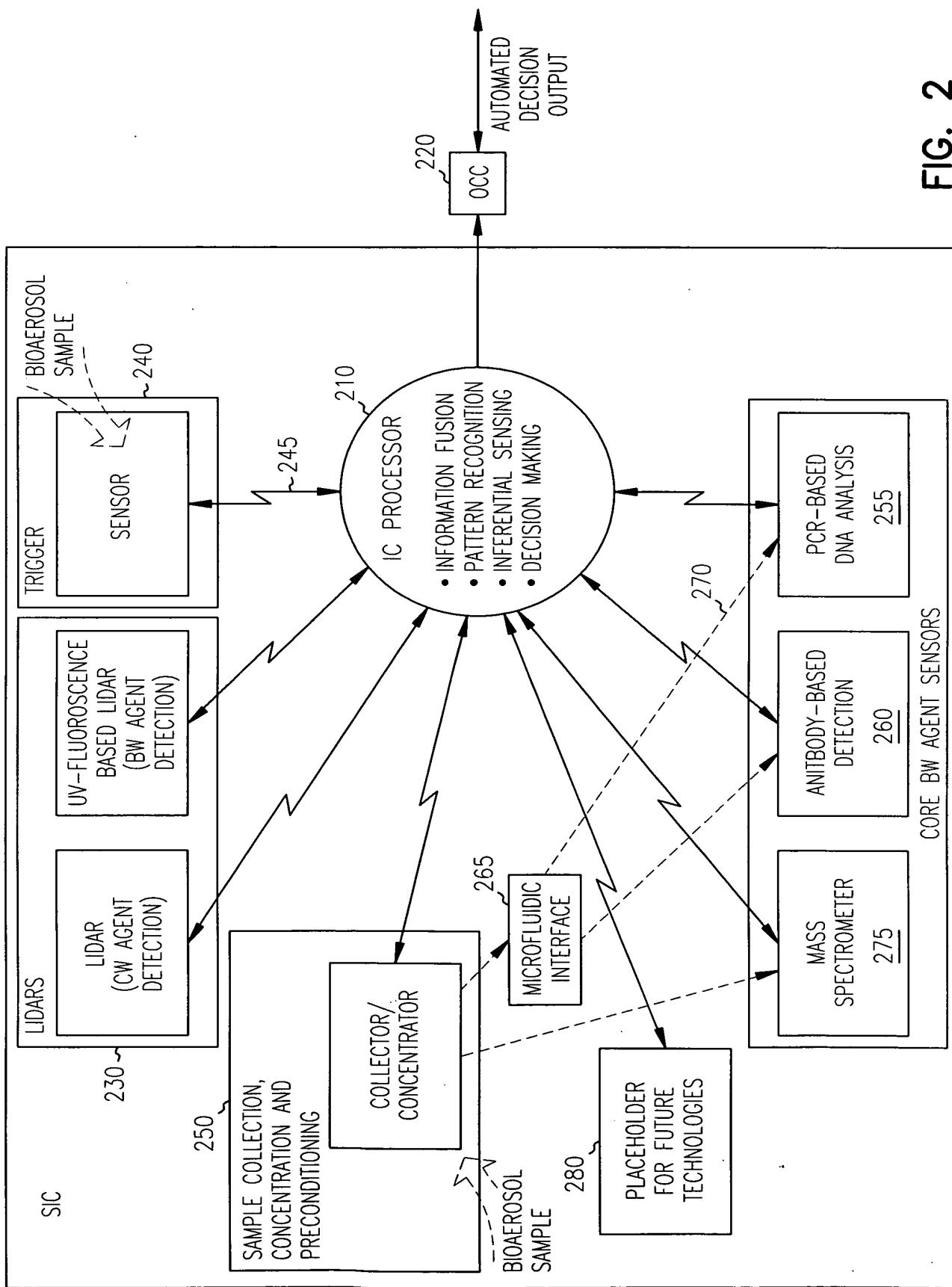


FIG. 2

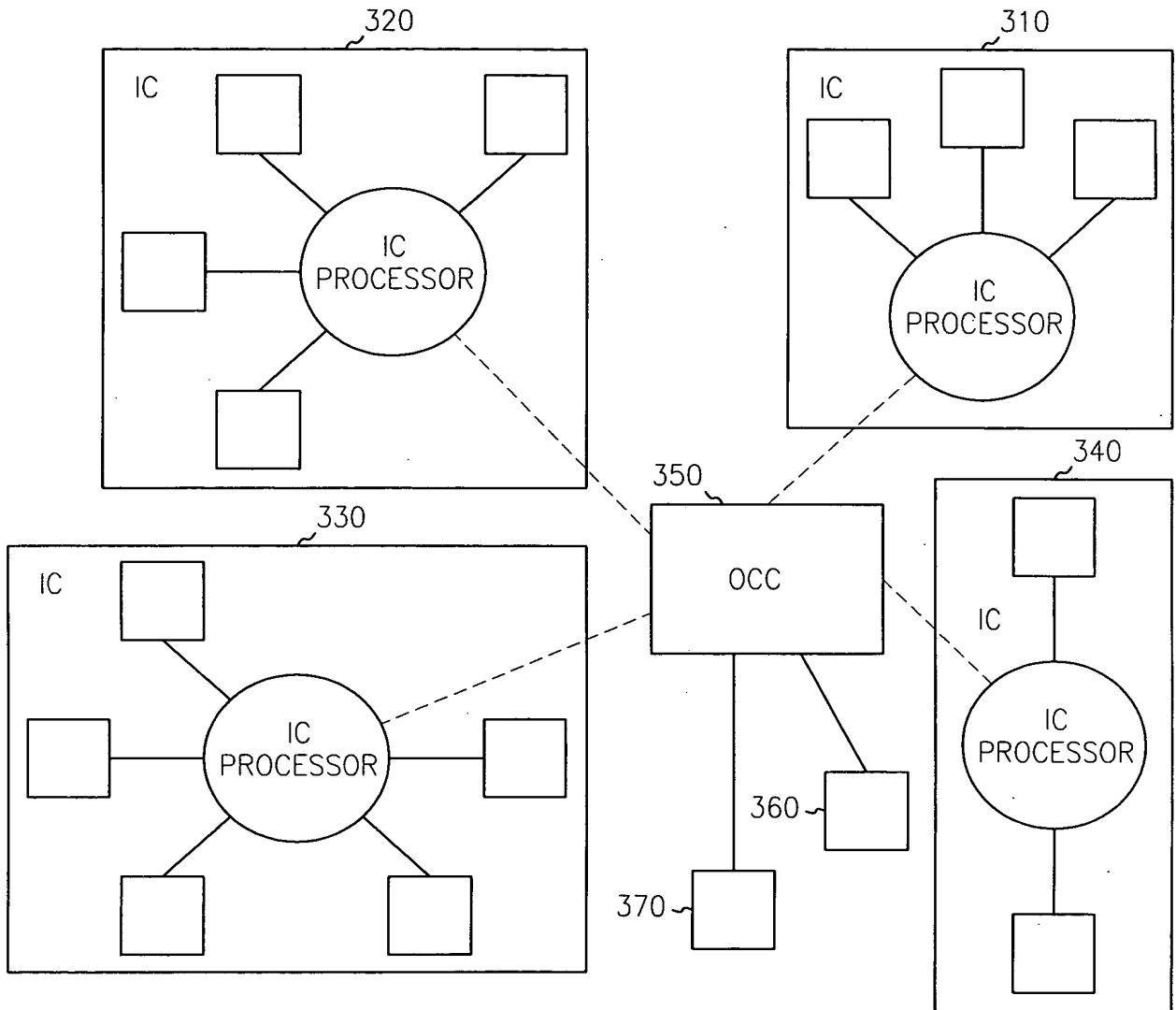


FIG. 3

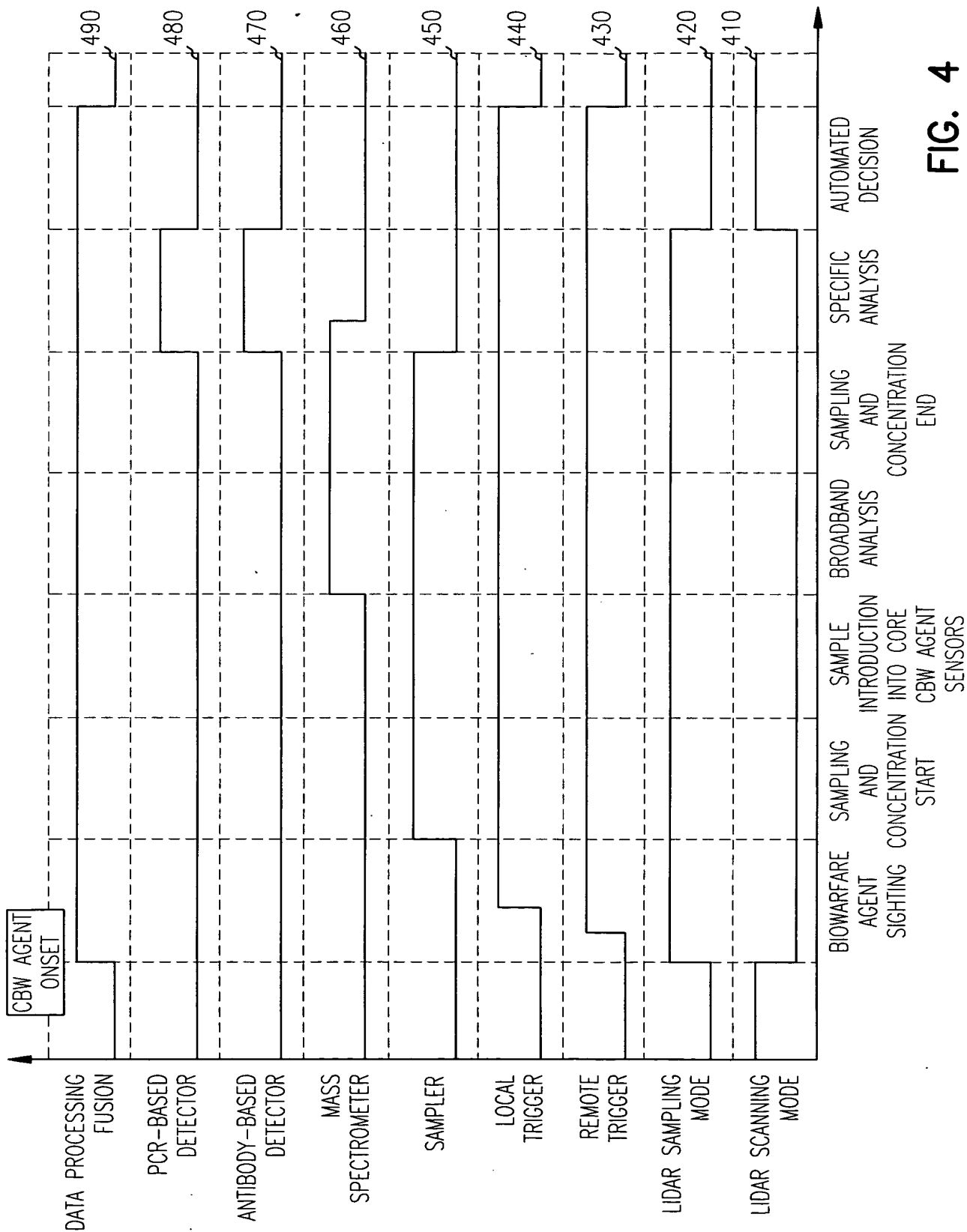


FIG. 4

5/16

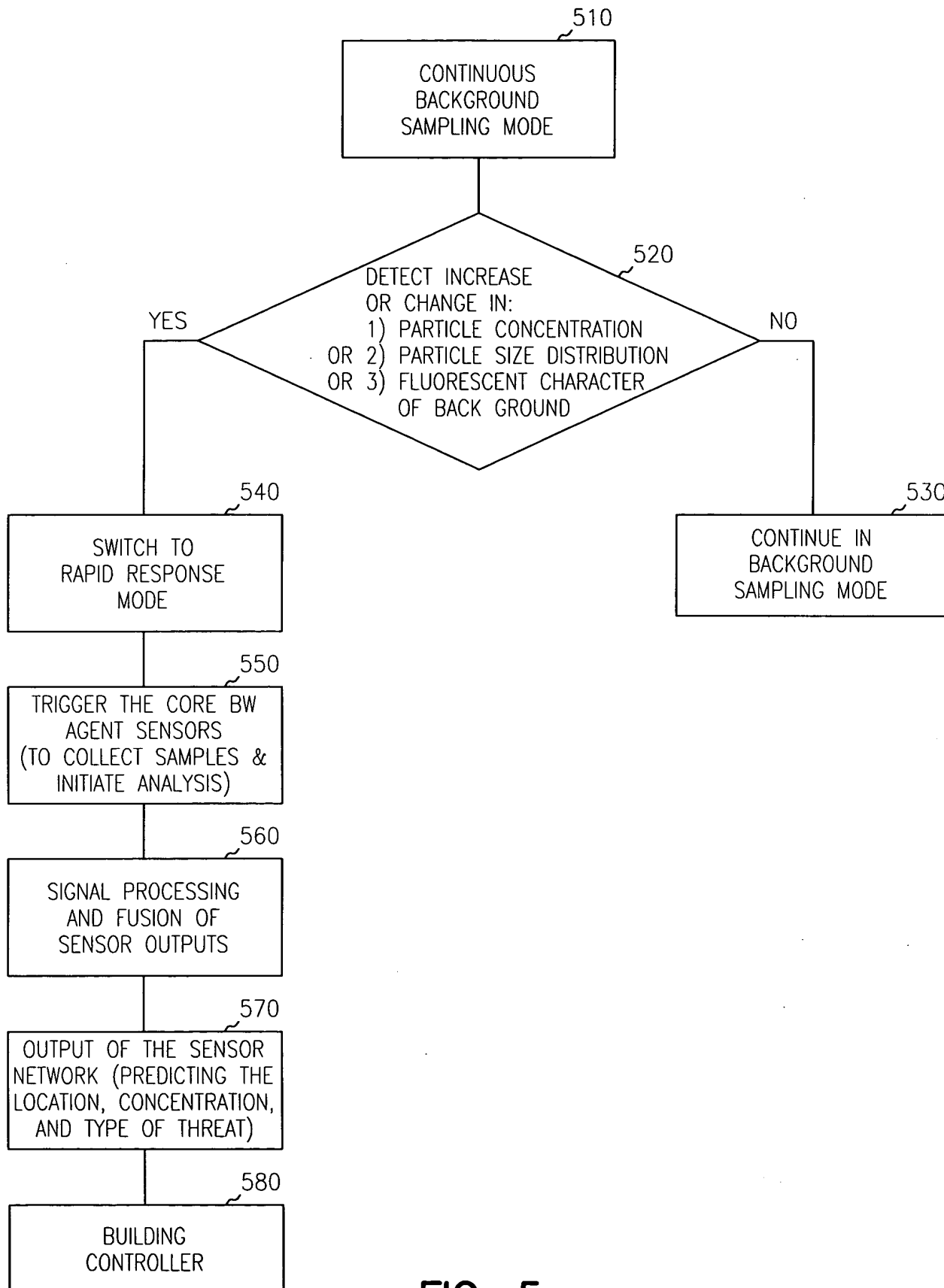


FIG. 5

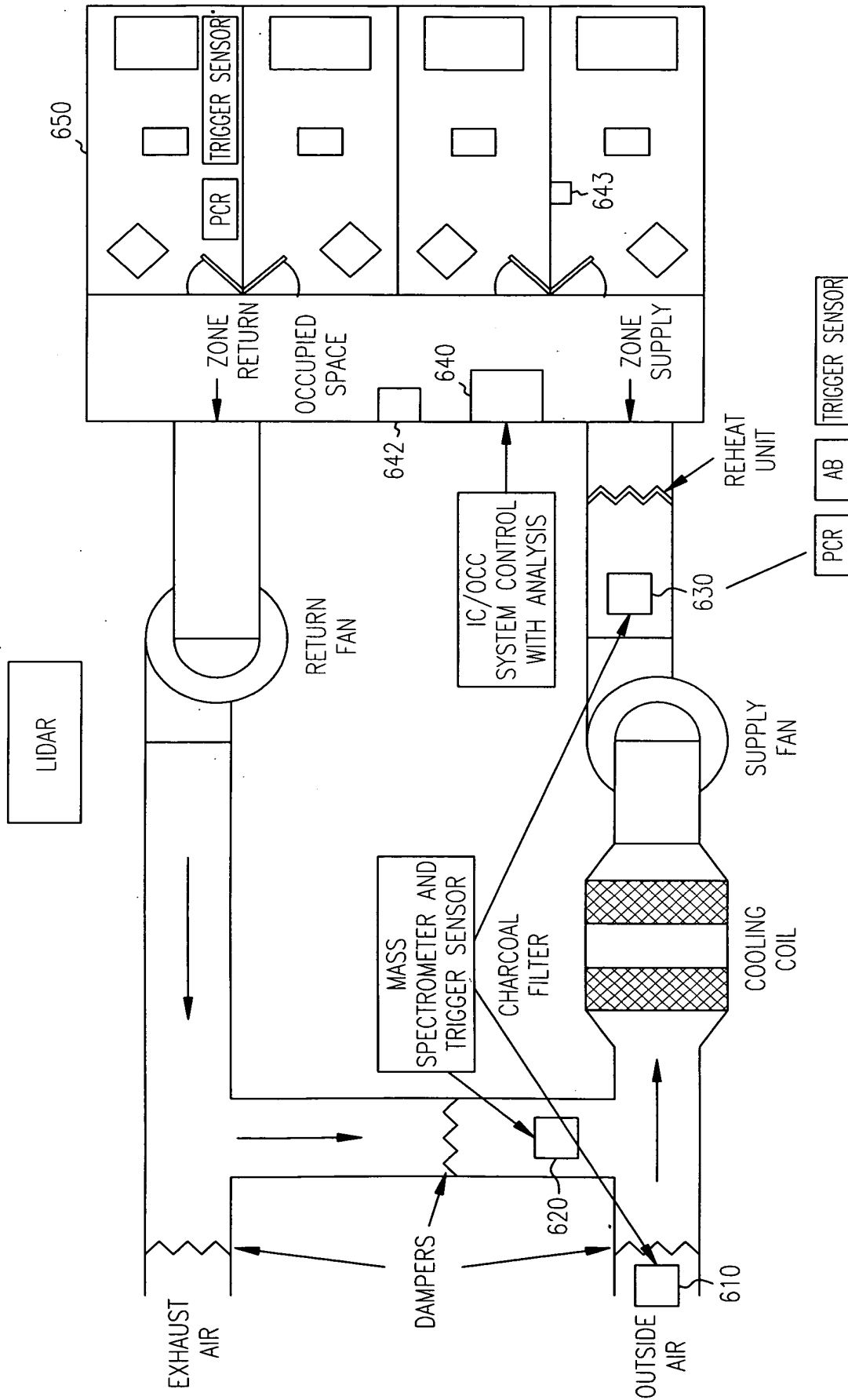


FIG. 6

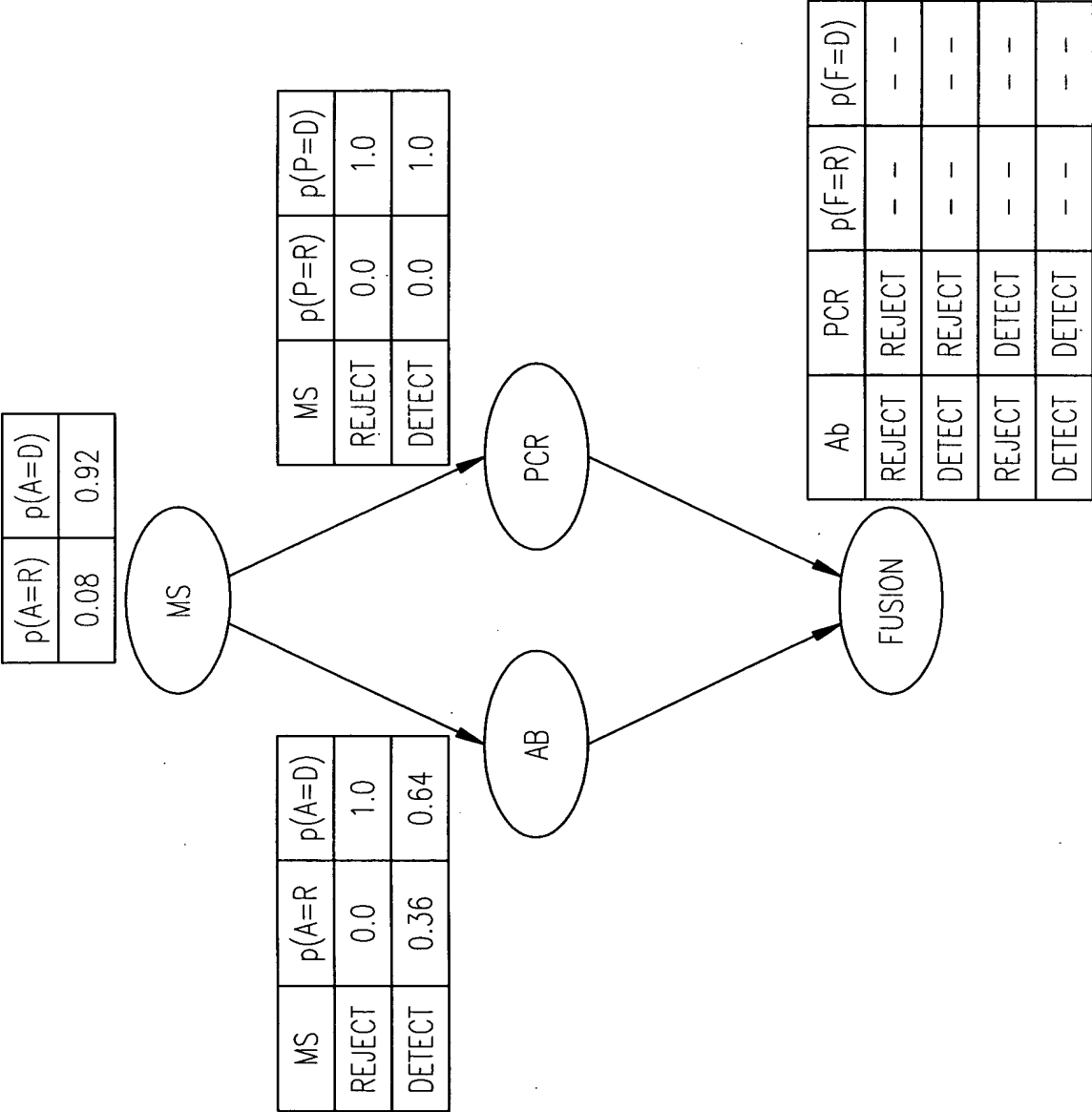


FIG. 7

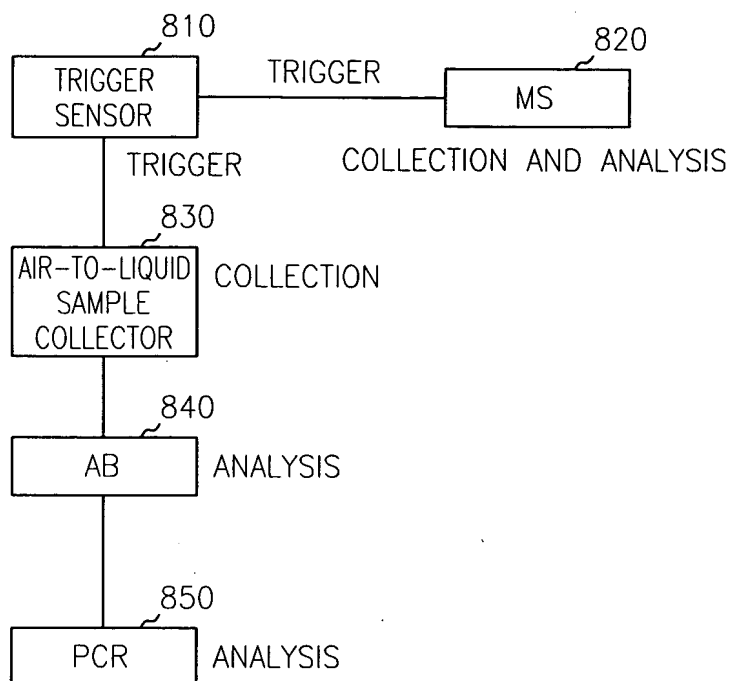


FIG. 8A

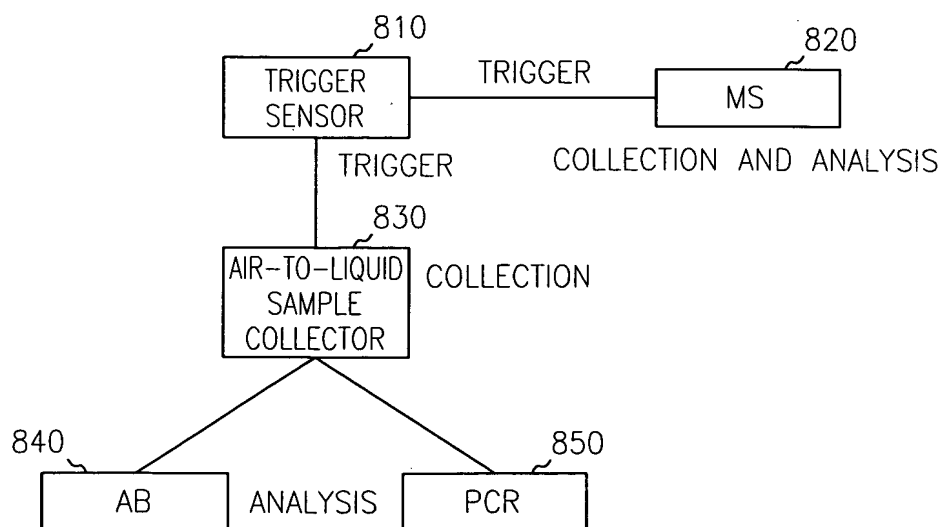


FIG. 8B

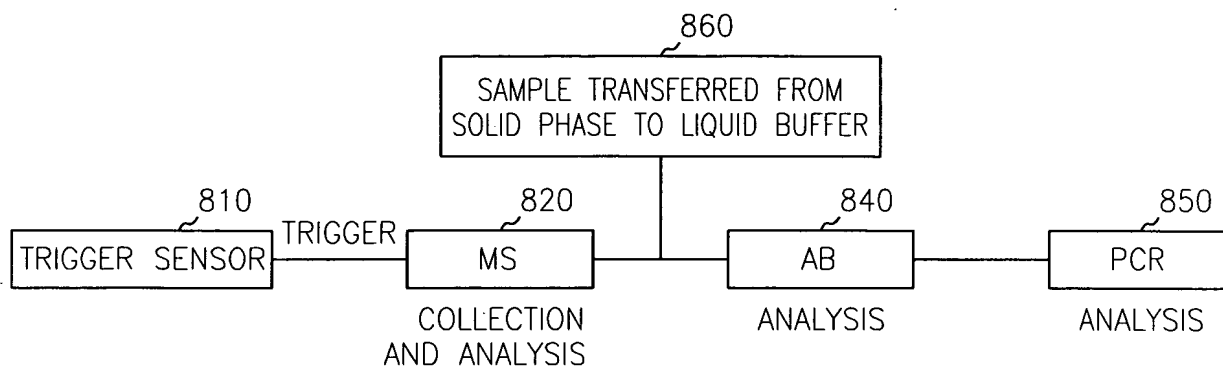


FIG. 8C

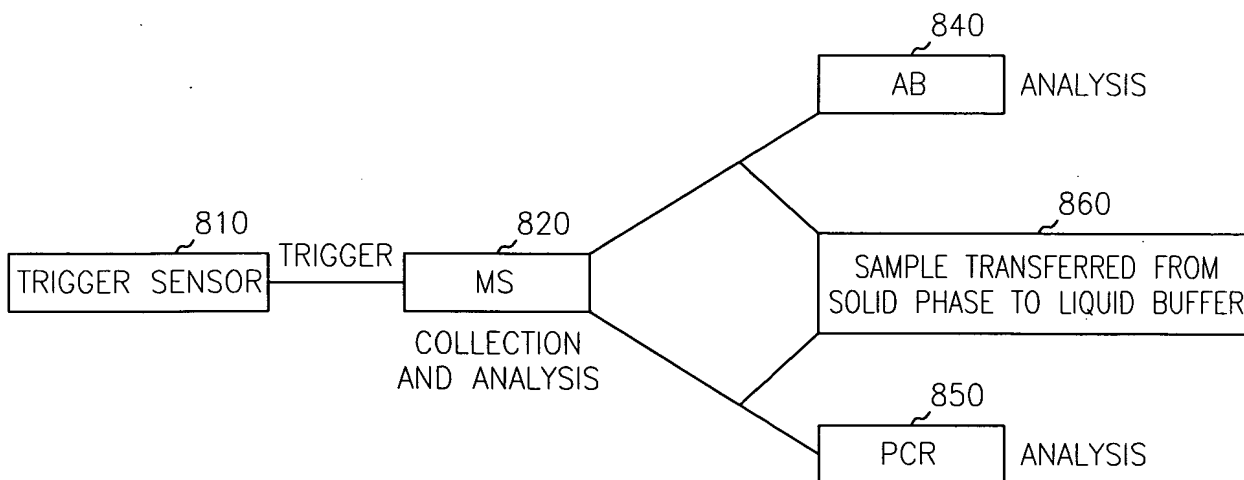


FIG. 8D

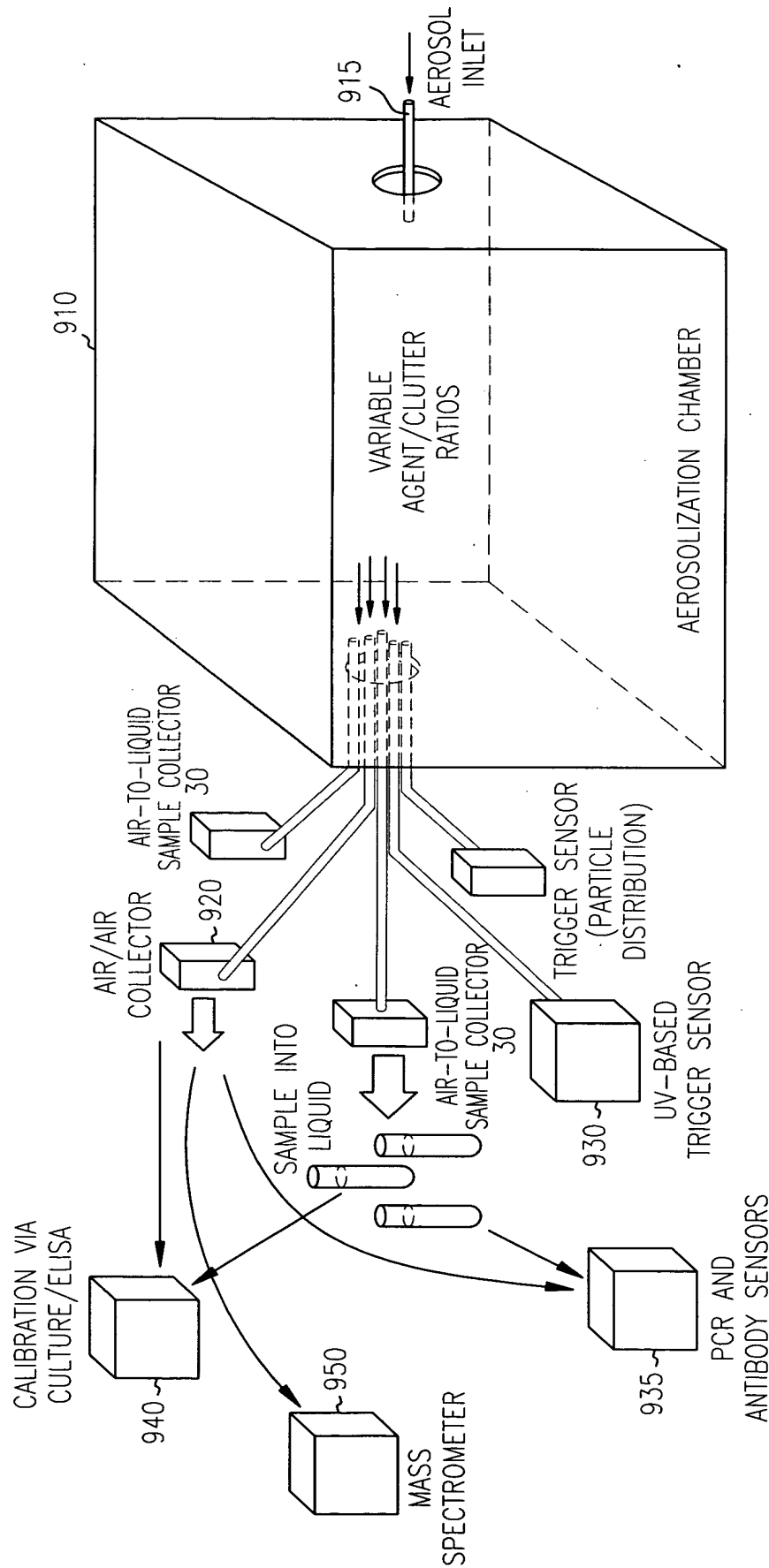


FIG. 9

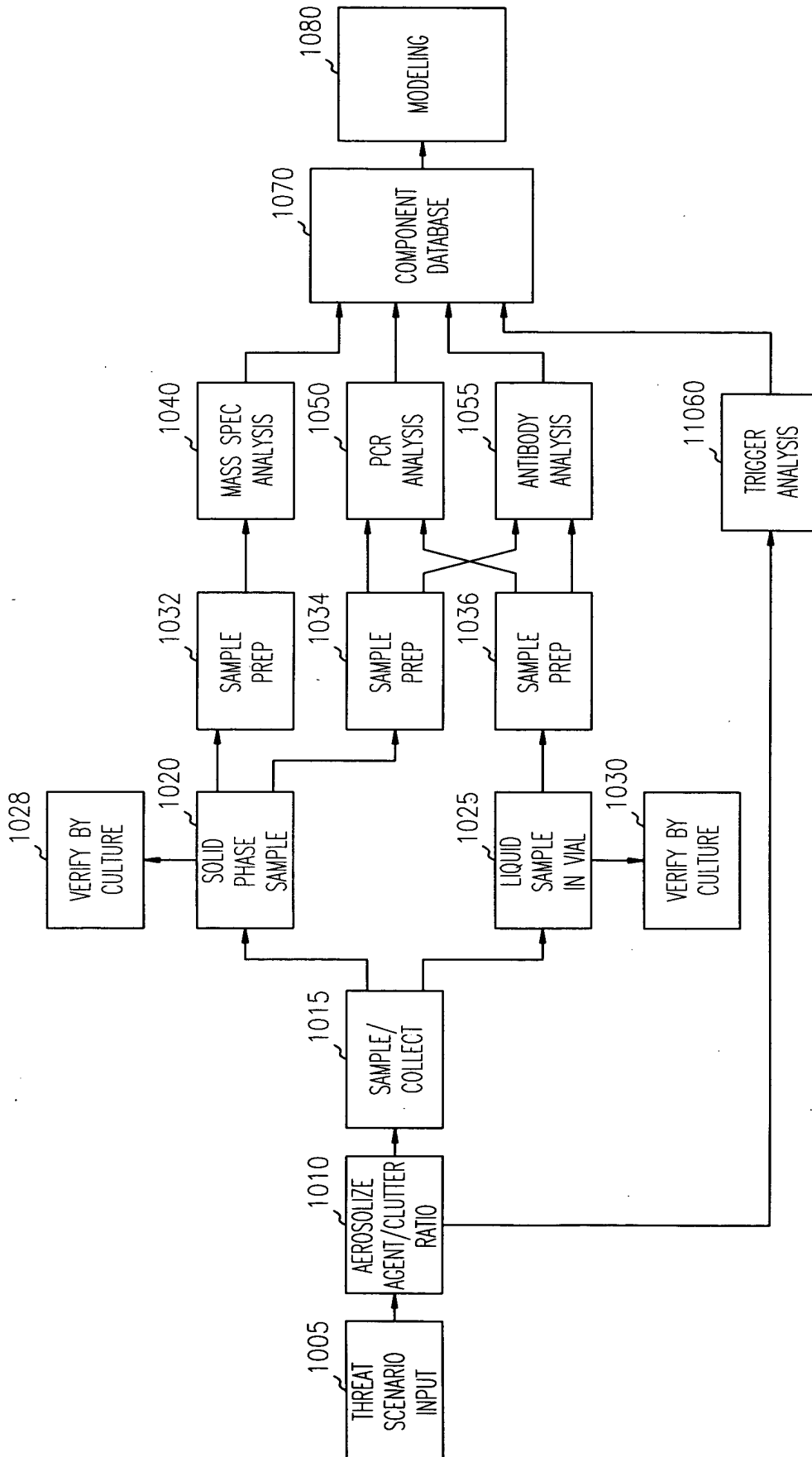


FIG. 10

TITLE: Architectures of Sensor Networks for Biological and Chemical Warfare Agent
Detection and Identification

INVENTORS NAME: Aravind Padmanabhan et al.

DOCKET NO.: 256.124US1

12/16

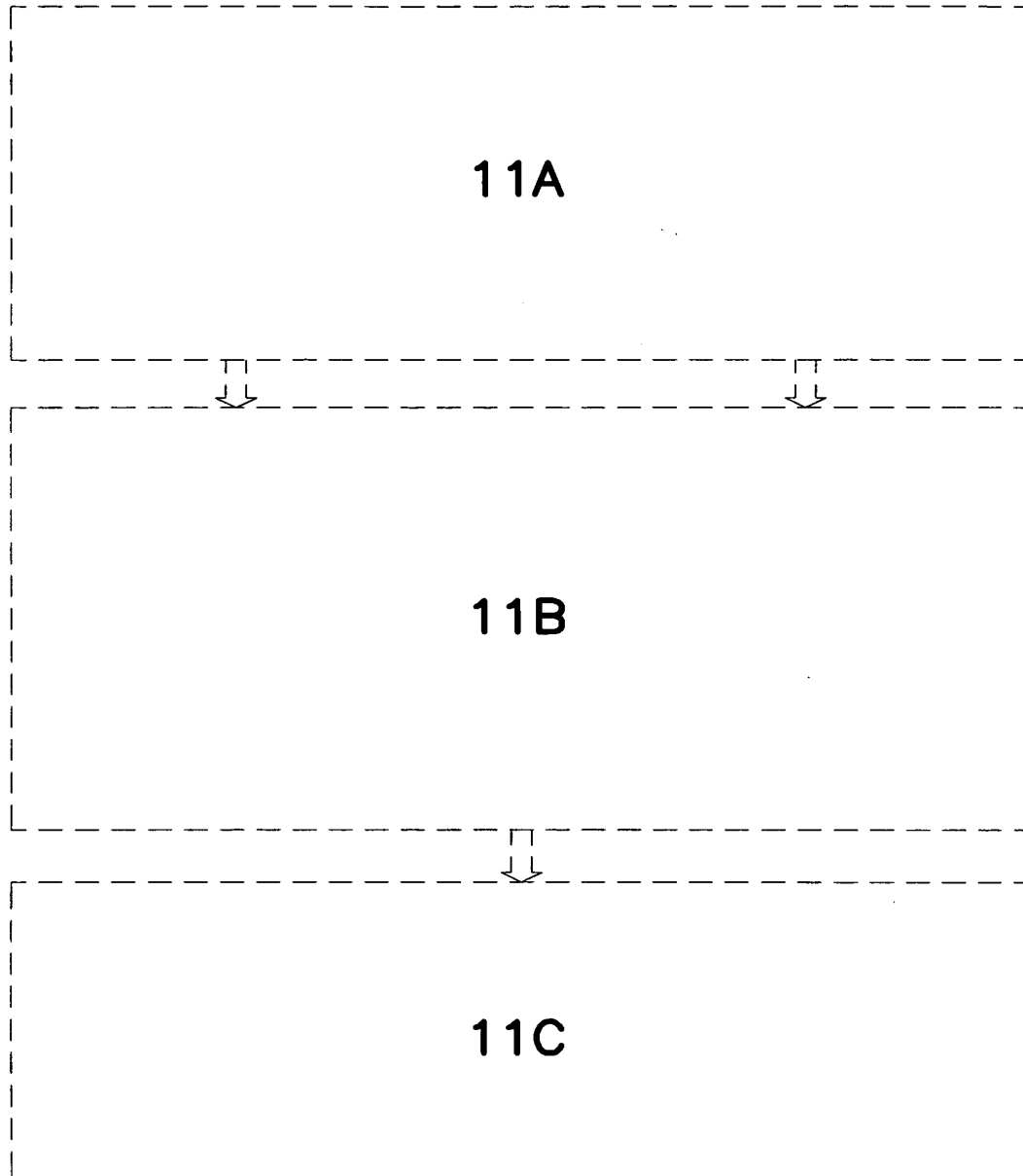


FIG. 11

13/16

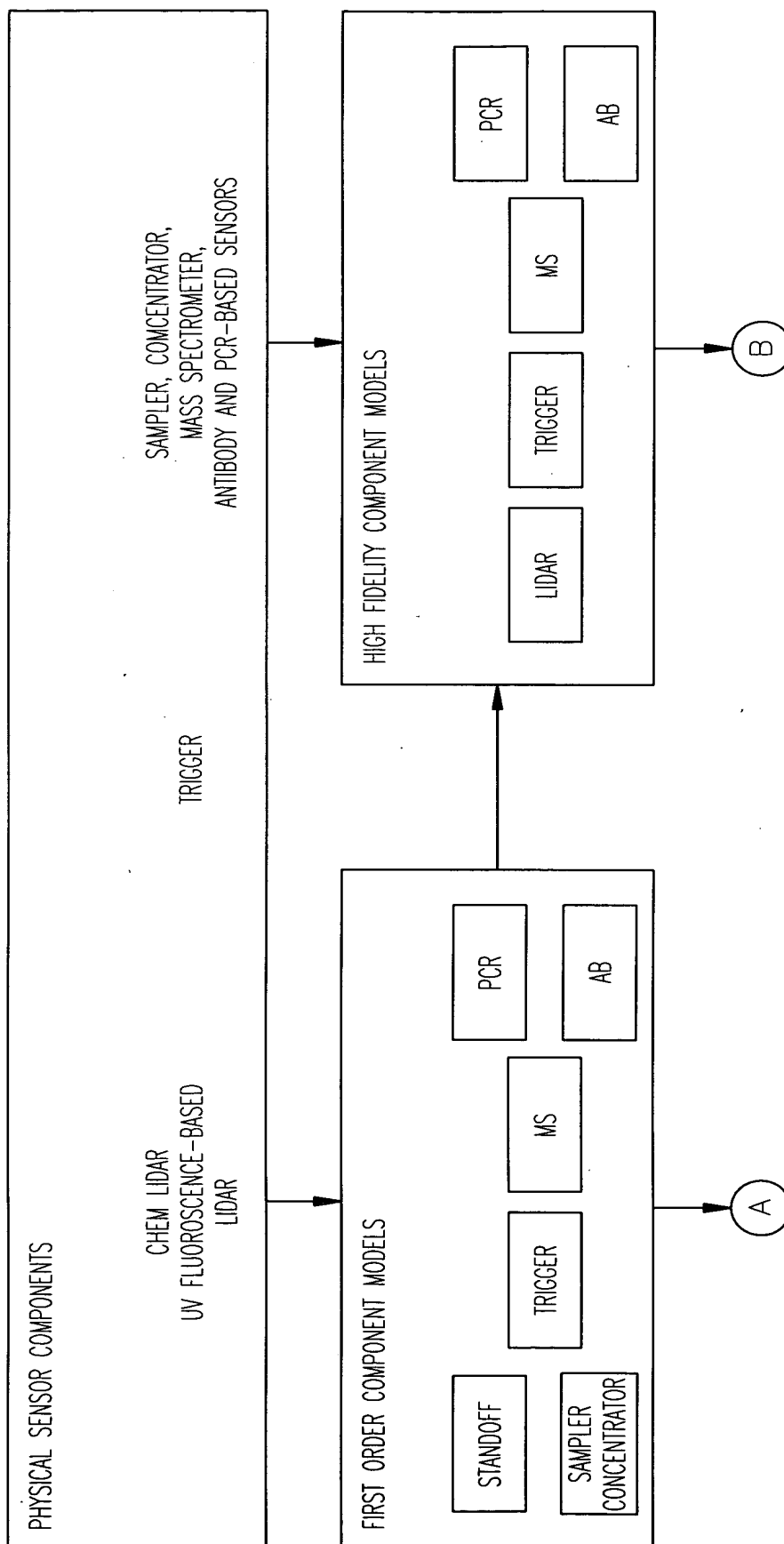


FIG. 11A

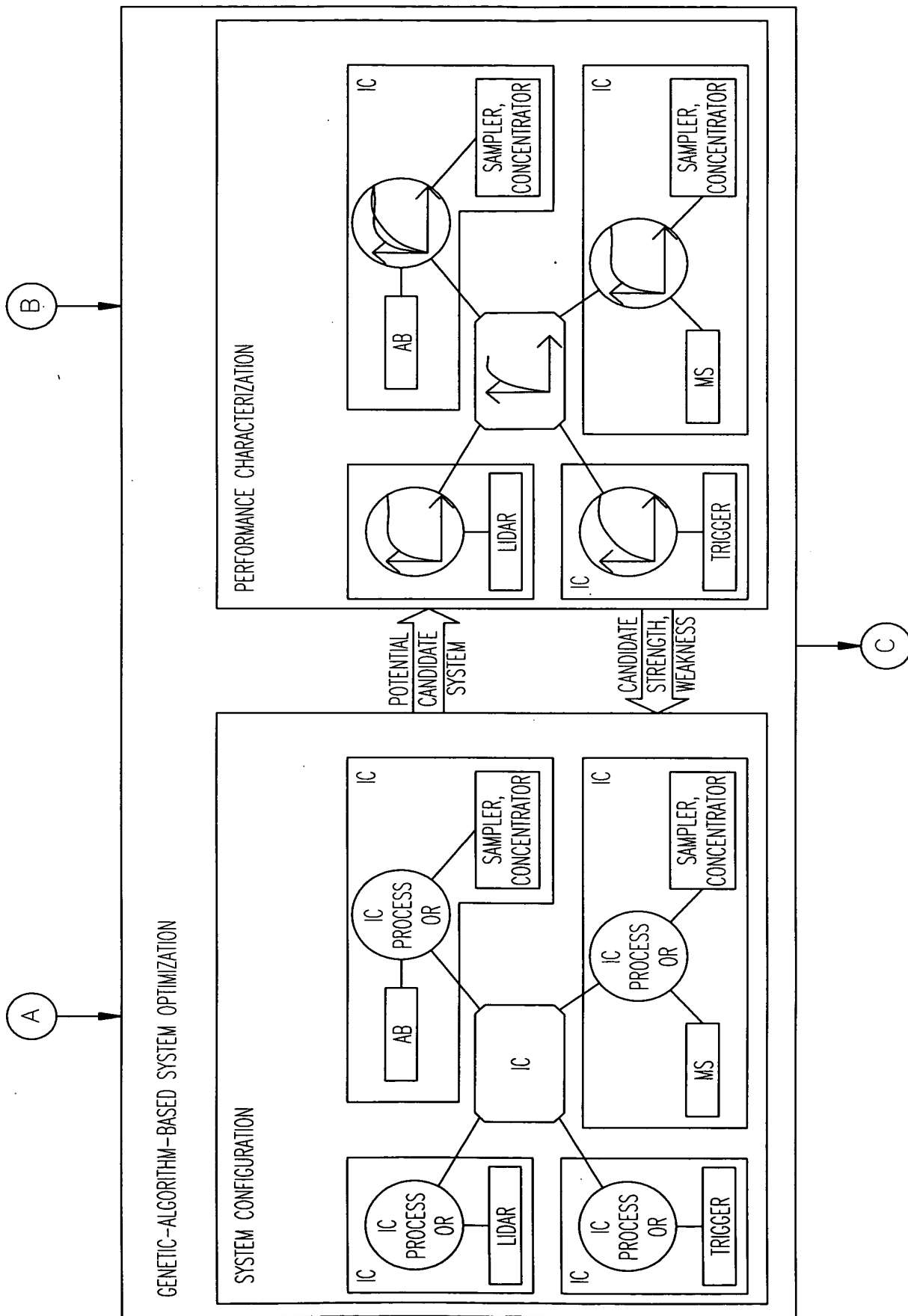


FIG. 11B

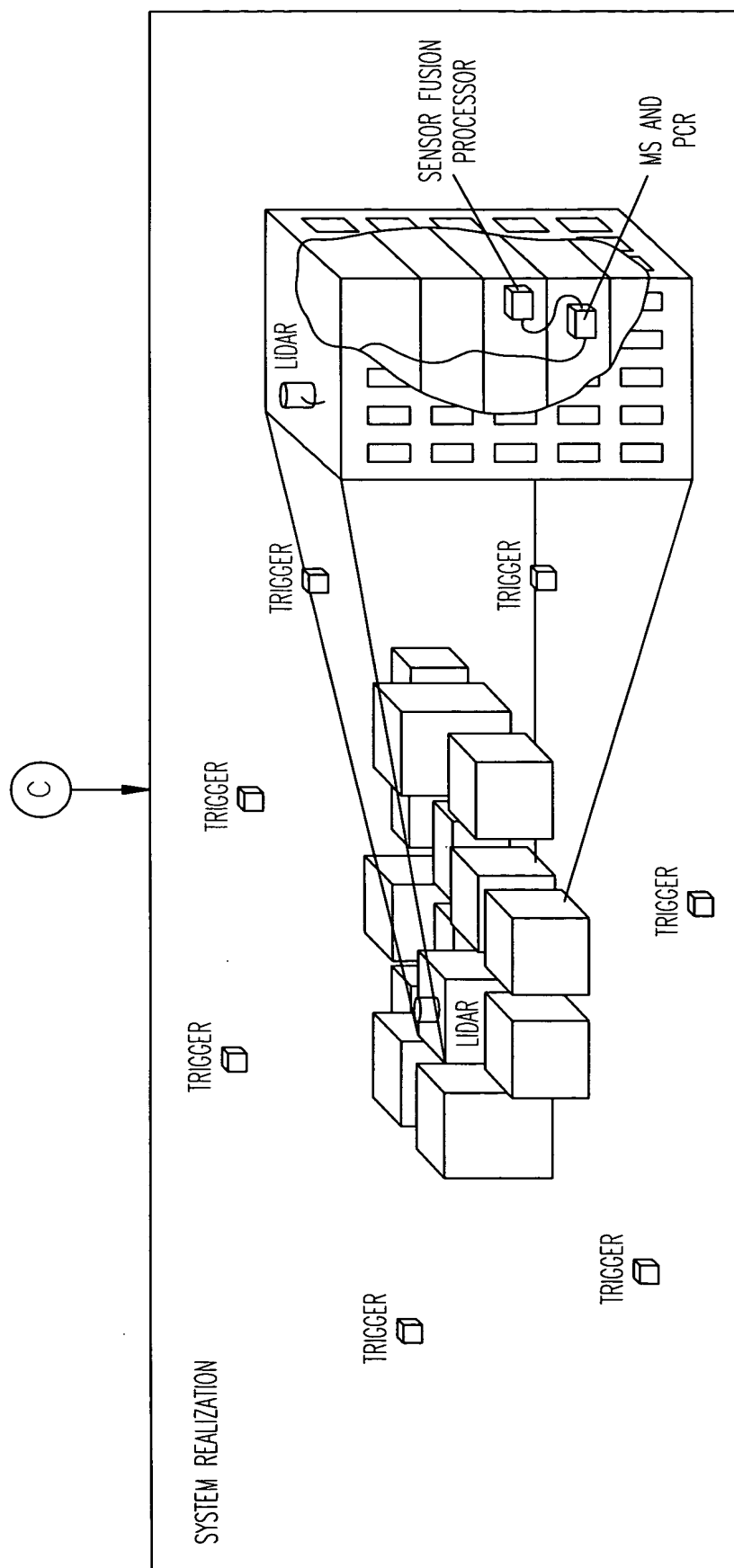


FIG. 11C


OPTIMIZATION PROCESS

VARY SYSTEM CONFIGURATIONS AND DETECTOR THRESHOLDS TO:

- MAXIMIZE PROBABILITY OF DETECTION (P_D)
- MINIMIZE PROBABILITY OF FALSE ALARM (P_{FA})
- MINIMIZE TIME OF RESPONSE (T_R)
- MINIMIZE CONSUMABLE COST (\$)
- MAXIMIZE MEAN TIME BEFORE SERVICE (MTBS)

$$Q \sim \frac{P_D \cdot \text{MTBS}}{P_{FA} \cdot T_R \cdot \$}$$

1310



Q = FIGURE OF MERIT FOR THE NETWORK

DETERMINE AND OPTIMIZE THE FIGURE OF MERIT
DEPENDING UPON THREAT SCENARIOS

FIG. 12